

FIG. 1  
Related Art

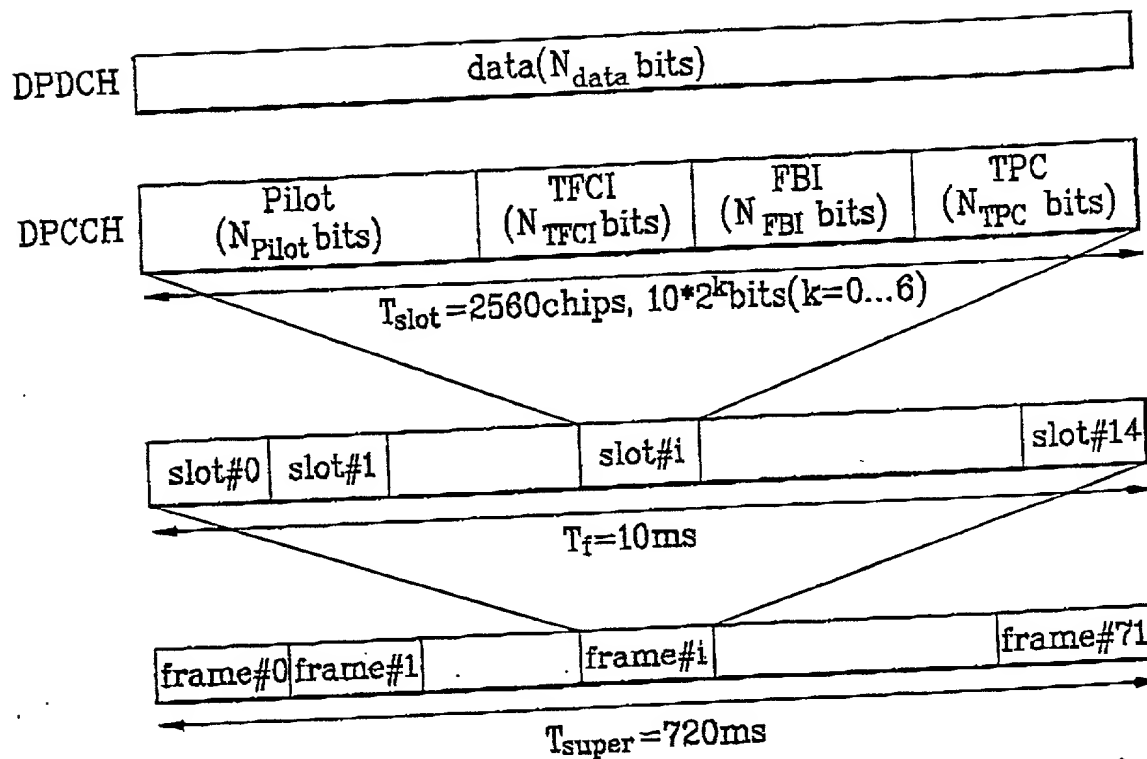


FIG. 2  
Related Art

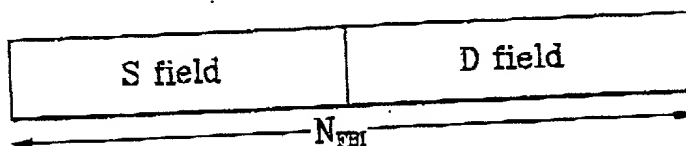


FIG. 3a

Hadarmad codes of 8 bits	Hadarmad codes of 16 bits
$H_{3,0} = 0000\ 0000$	$H_{4,0} = 0000\ 0000\ 0000\ 0000$
	$H_{4,1} = 0101\ 0101\ 0101\ 0101$
$H_{3,1} = 0101\ 0101$	$H_{4,2} = 0011\ 0011\ 0011\ 0011$
	$H_{4,3} = 0110\ 0110\ 0110\ 0110$
$H_{3,2} = 0011\ 0011$	$H_{4,4} = 0000\ 1111\ 0000\ 1111$
	$H_{4,5} = 0101\ 1010\ 0101\ 1010$
$H_{3,3} = 0110\ 0110$	$H_{4,6} = 0011\ 1100\ 0011\ 1100$
	$H_{4,7} = 0110\ 1001\ 0110\ 1001$
$H_{3,4} = 0000\ 1111$	$H_{4,8} = 0000\ 0000\ 1111\ 1111$
	$H_{4,9} = 0101\ 0101\ 1010\ 1010$
$H_{3,5} = 0101\ 0101$	$H_{4,10} = 0011\ 0011\ 1100\ 1100$
	$H_{4,11} = 0110\ 0110\ 1001\ 1001$
$H_{3,6} = 0011\ 1100$	$H_{4,12} = 0000\ 1111\ 1111\ 0000$
	$H_{4,13} = 0101\ 1010\ 1010\ 0101$
$H_{3,7} = 0110\ 1001$	$H_{4,14} = 0011\ 1100\ 1100\ 0011$
	$H_{4,15} = 0110\ 1001\ 1001\ 0110$

FIG. 3b

bi-orthogonal codes of 8 bits	bi-orthogonal codes of 16 bits
$B_{3,0} = 0000\ 0000$	$B_{4,0} = 0000\ 0000\ 0000\ 0000$
$B_{3,1} = 1111\ 1111$	$B_{4,1} = 1111\ 1111\ 1111\ 1111$
$B_{3,2} = 0101\ 0101$	$B_{4,2} = 0101\ 0101\ 0101\ 0101$
$B_{3,3} = 1010\ 1010$	$B_{4,3} = 1010\ 1010\ 1010\ 1010$
$B_{3,4} = 0011\ 0011$	$B_{4,4} = 0011\ 0011\ 0011\ 0011$
$B_{3,5} = 1100\ 1100$	$B_{4,5} = 1100\ 1100\ 1100\ 1100$
$B_{3,6} = 0110\ 0110$	$B_{4,6} = 0110\ 0110\ 0110\ 0110$
$B_{3,7} = 1001\ 1001$	$B_{4,7} = 1001\ 1001\ 1001\ 1001$
$B_{3,8} = 0000\ 1111$	$B_{4,8} = 0000\ 1111\ 0000\ 1111$
$B_{3,9} = 1111\ 0000$	$B_{4,9} = 1111\ 0000\ 1111\ 0000$
$B_{3,10} = 0101\ 1010$	$B_{4,10} = 0101\ 1010\ 0101\ 1010$
$B_{3,11} = 1010\ 0101$	$B_{4,11} = 1010\ 0101\ 1010\ 0101$
$B_{3,12} = 0011\ 1100$	$B_{4,12} = 0011\ 1100\ 0011\ 1100$
$B_{3,13} = 1100\ 0011$	$B_{4,13} = 1100\ 0011\ 1100\ 0011$
$B_{3,14} = 0110\ 1001$	$B_{4,14} = 0110\ 1001\ 0110\ 1001$
$B_{3,15} = 1001\ 0110$	$B_{4,15} = 1001\ 0110\ 1001\ 0110$
	$B_{4,16} = 0000\ 0000\ 1111\ 1111$
	$B_{4,17} = 1111\ 1111\ 0000\ 0000$
	$B_{4,18} = 0101\ 0101\ 1010\ 1010$
	$B_{4,19} = 1010\ 1010\ 0101\ 0101$
	$B_{4,20} = 0011\ 0011\ 1100\ 1100$
	$B_{4,21} = 1100\ 1100\ 0011\ 0011$
	$B_{4,22} = 0110\ 0110\ 1001\ 1001$
	$B_{4,23} = 1001\ 1001\ 0110\ 0110$
	$B_{4,24} = 0000\ 1111\ 1111\ 0000$
	$B_{4,25} = 1111\ 0000\ 0000\ 1111$
	$B_{4,26} = 0101\ 1010\ 1010\ 0101$
	$B_{4,27} = 1010\ 0101\ 0101\ 1010$
	$B_{4,28} = 0011\ 1100\ 1100\ 0011$
	$B_{4,29} = 1100\ 0011\ 0011\ 1100$
	$B_{4,30} = 0110\ 1001\ 1001\ 0110$
	$B_{4,31} = 1001\ 0110\ 0110\ 1001$

FIG. 4A

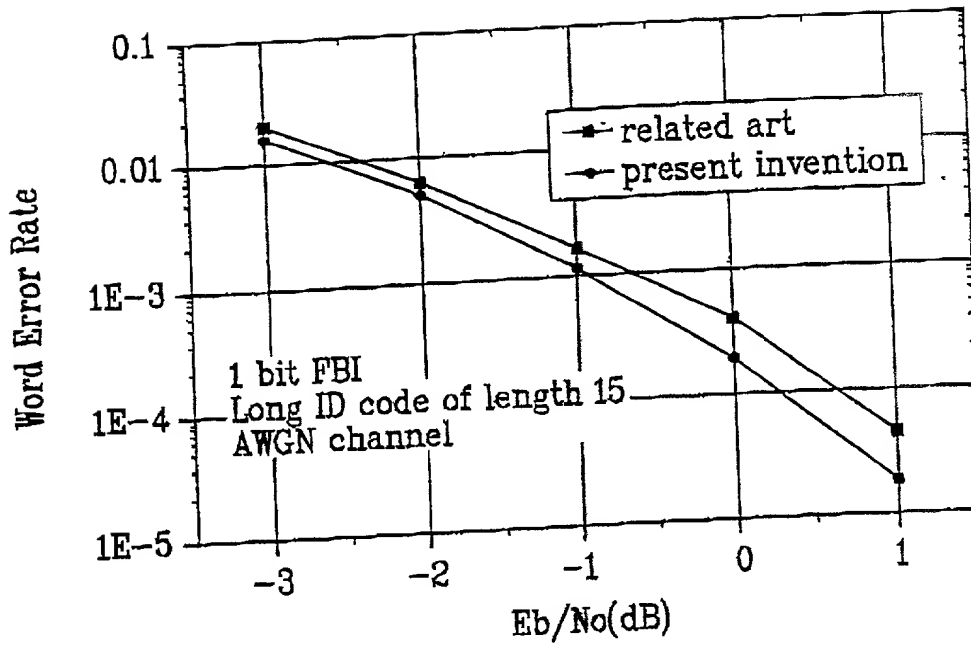


FIG. 4B

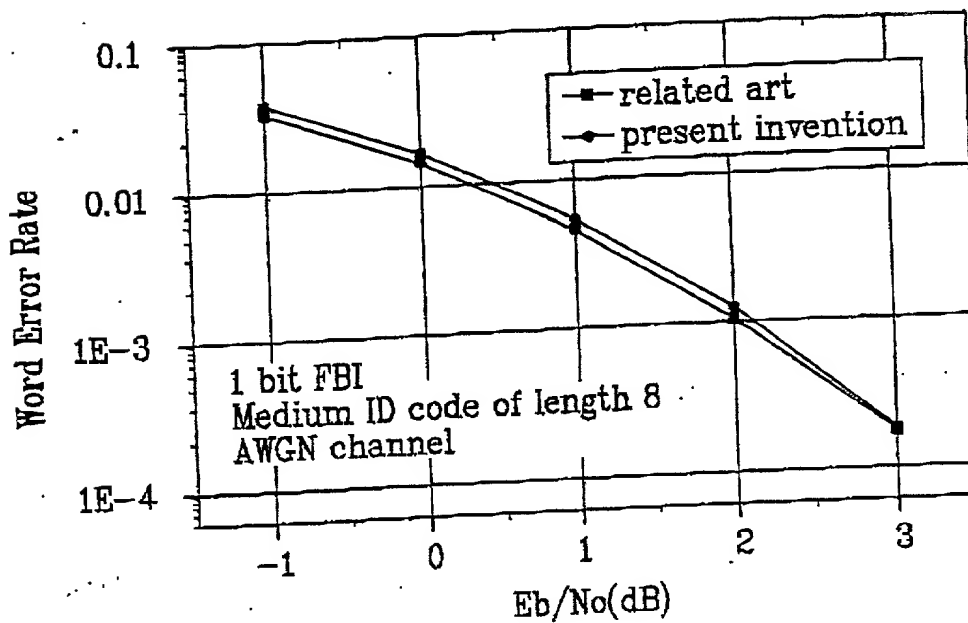


FIG. 4C

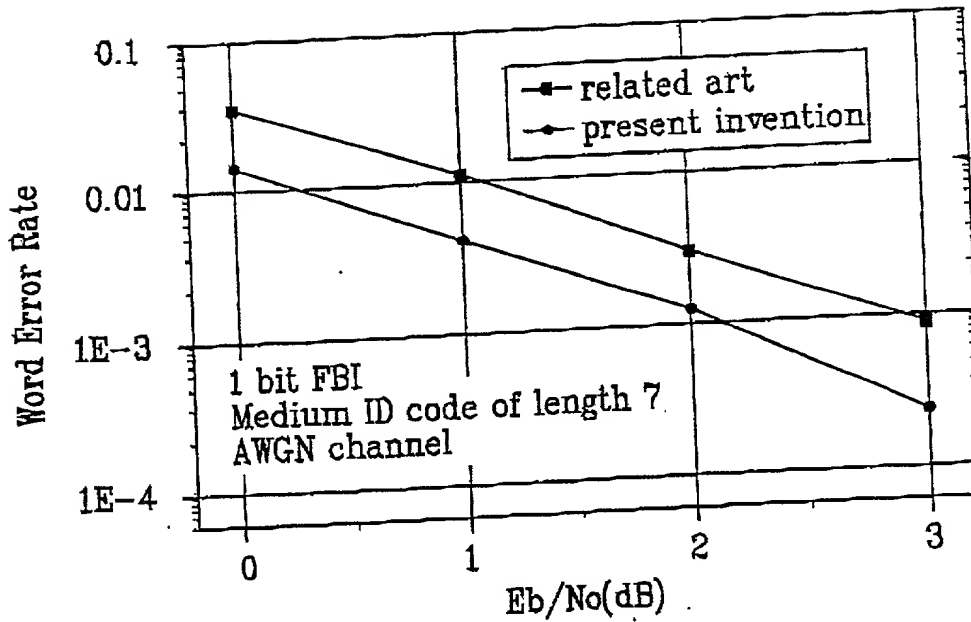
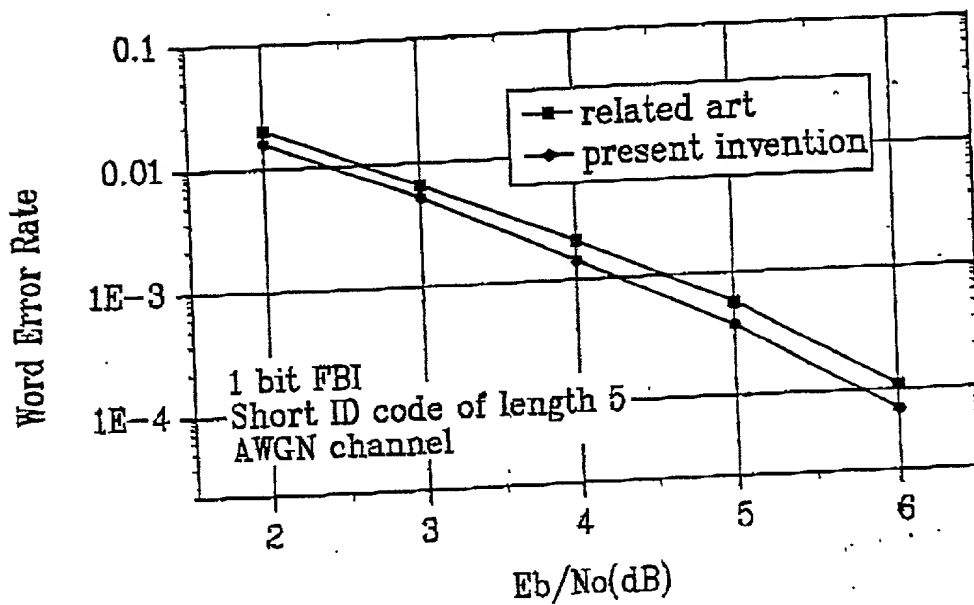
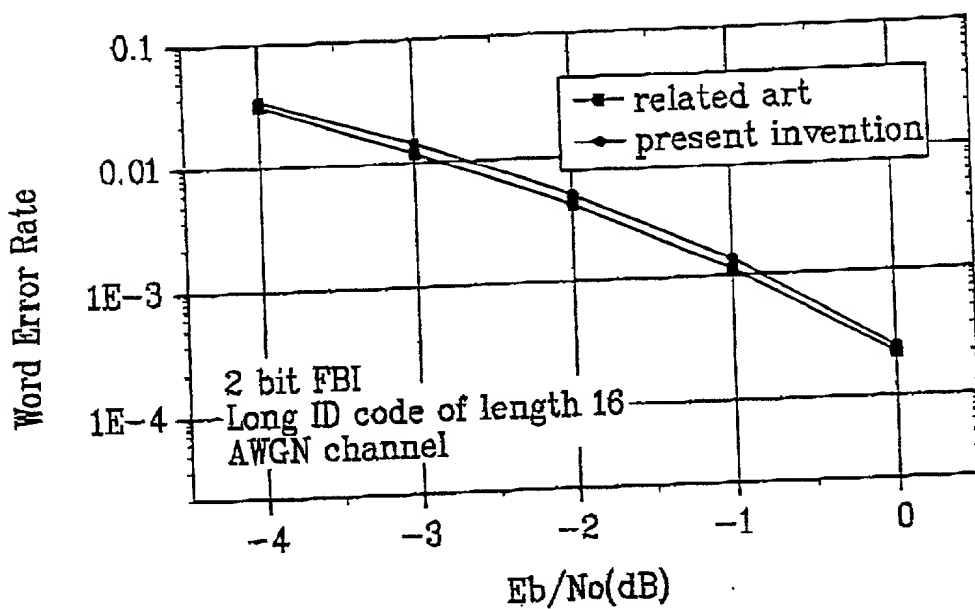


FIG. 4D



# FIG.5A



# FIG.5B

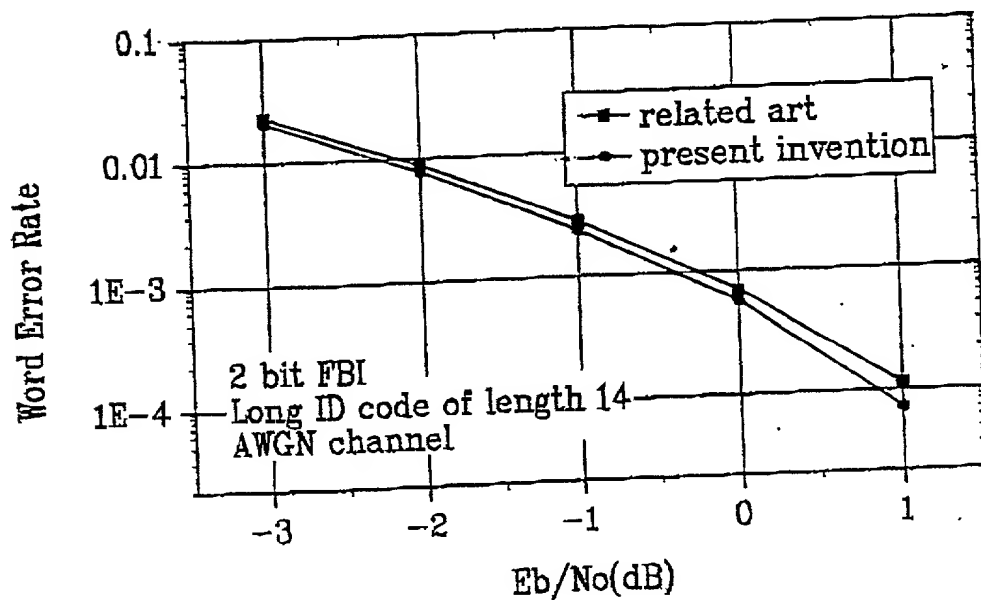


FIG.5C

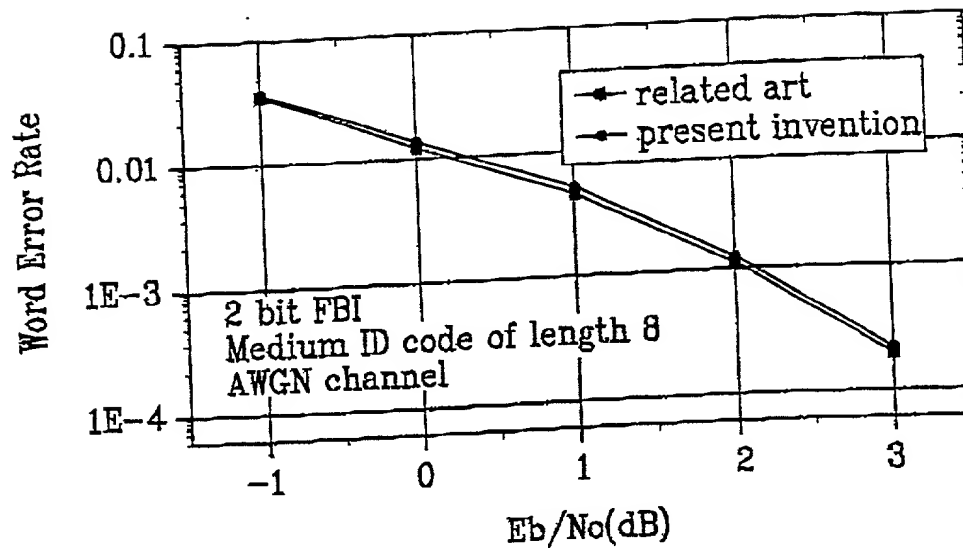
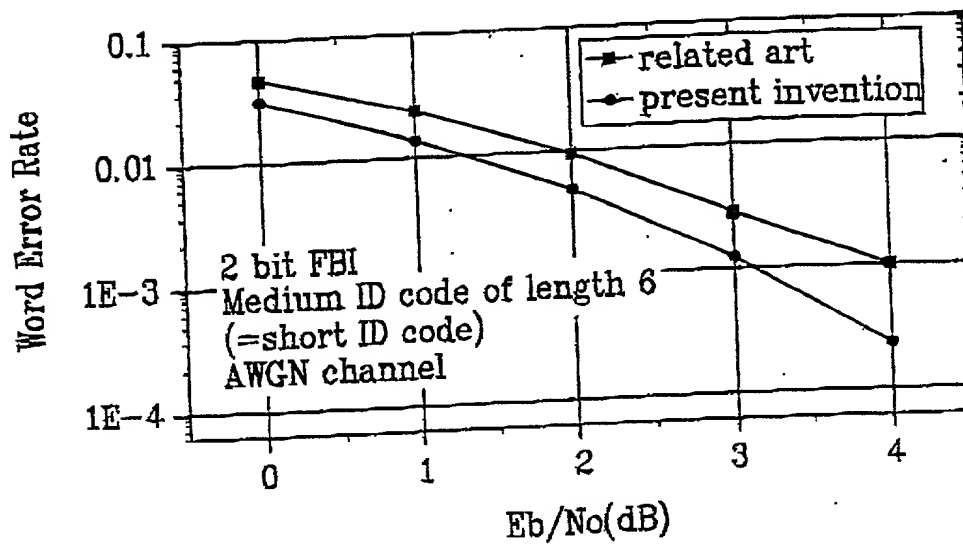
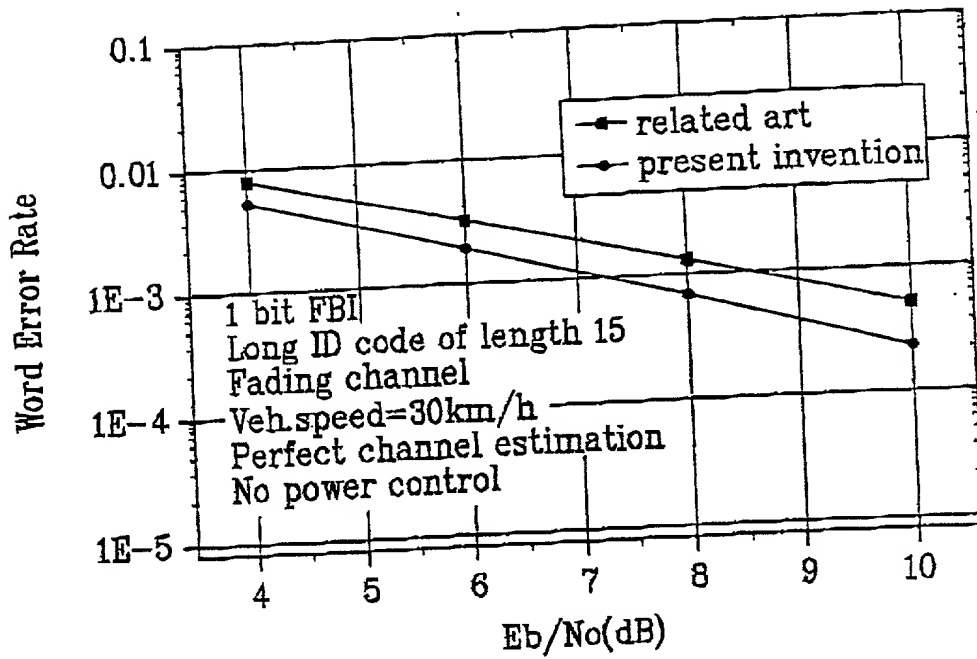


FIG.5D



# FIG. 6A



# FIG. 6B

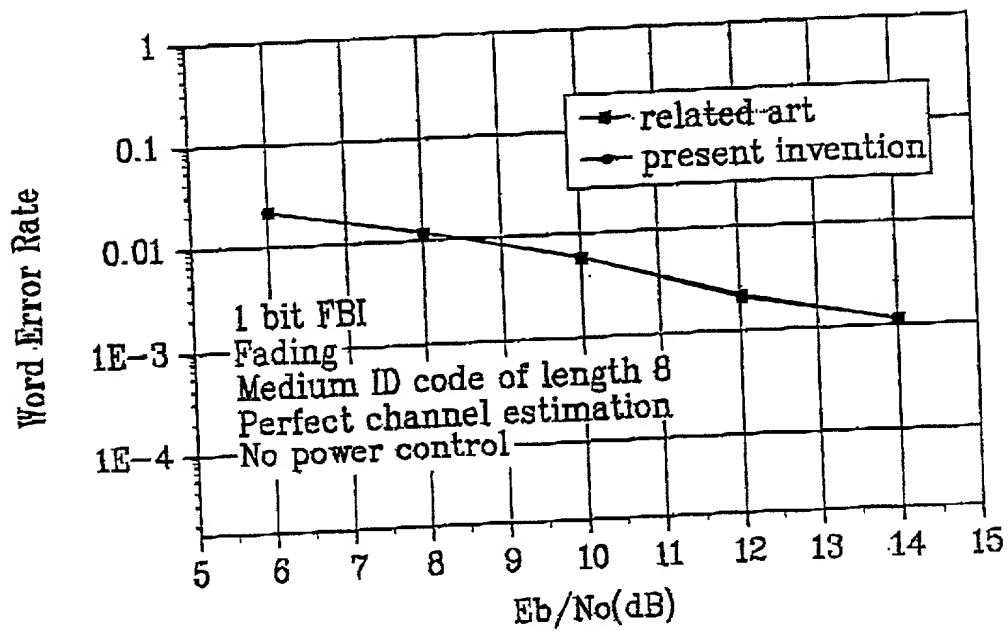




FIG. 6C

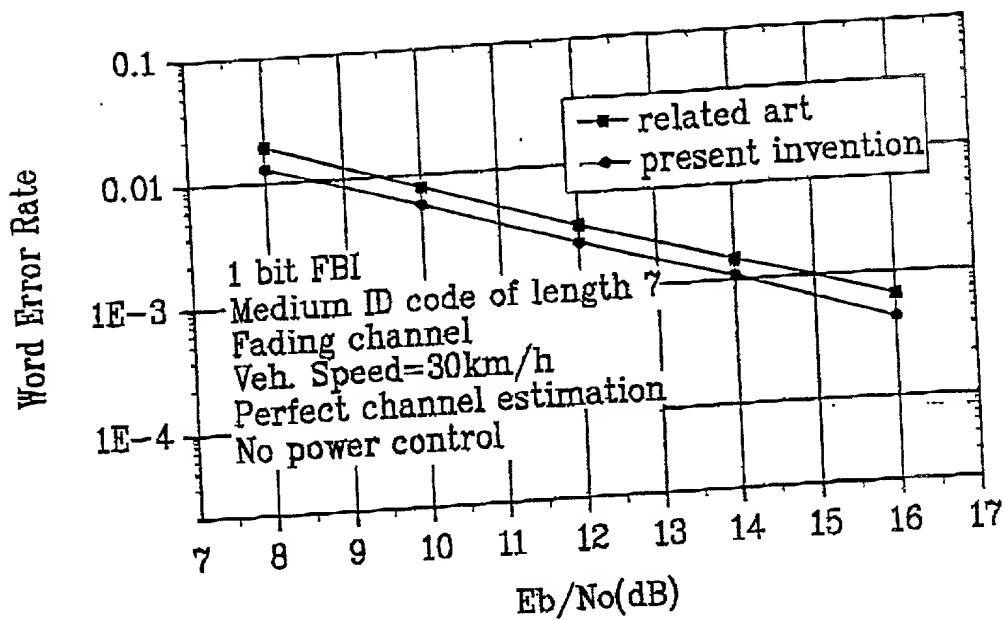


FIG. 6D

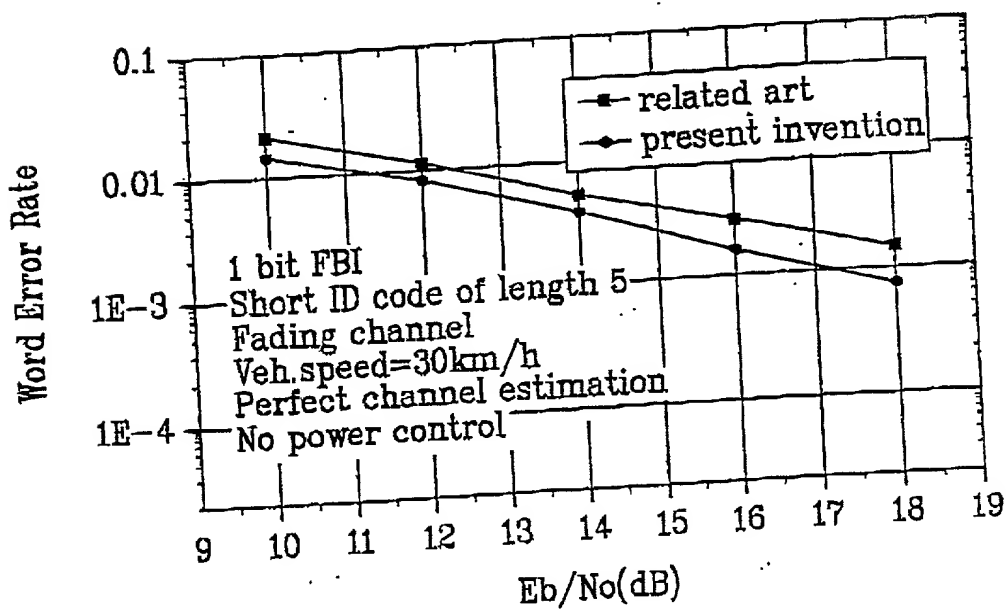


FIG. 7A

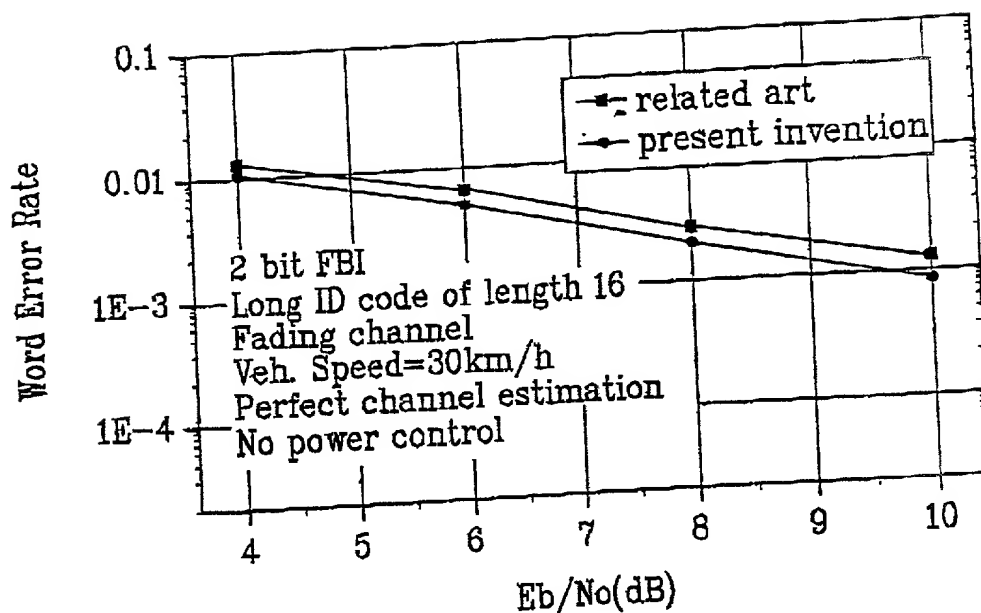


FIG. 7B

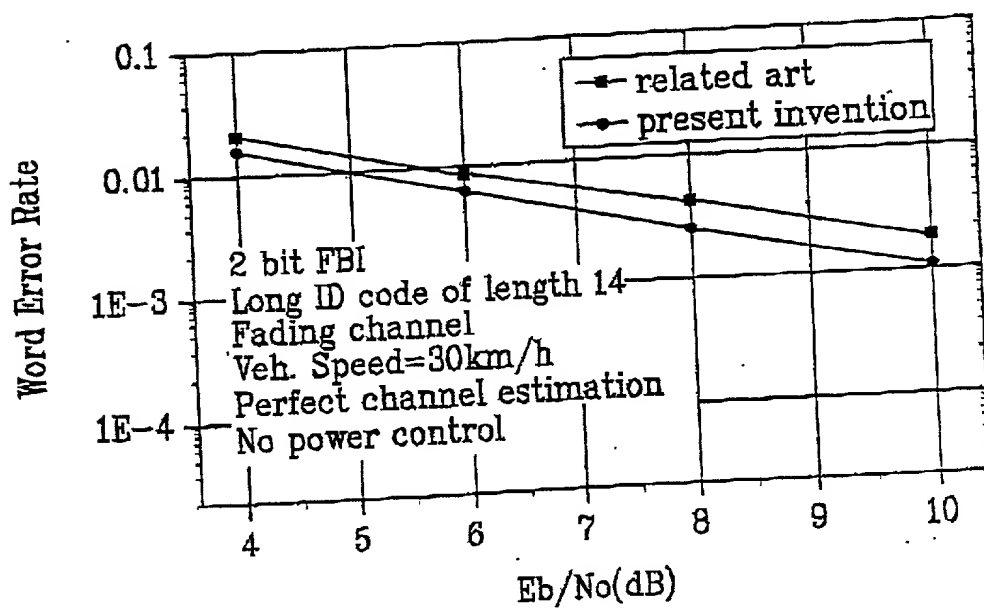


FIG. 7C

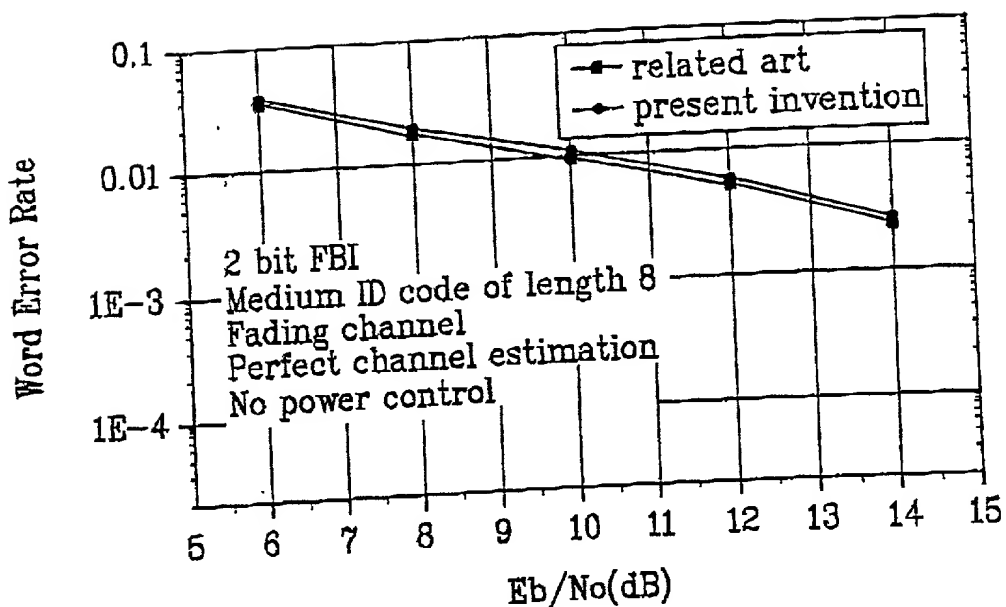


FIG. 7D

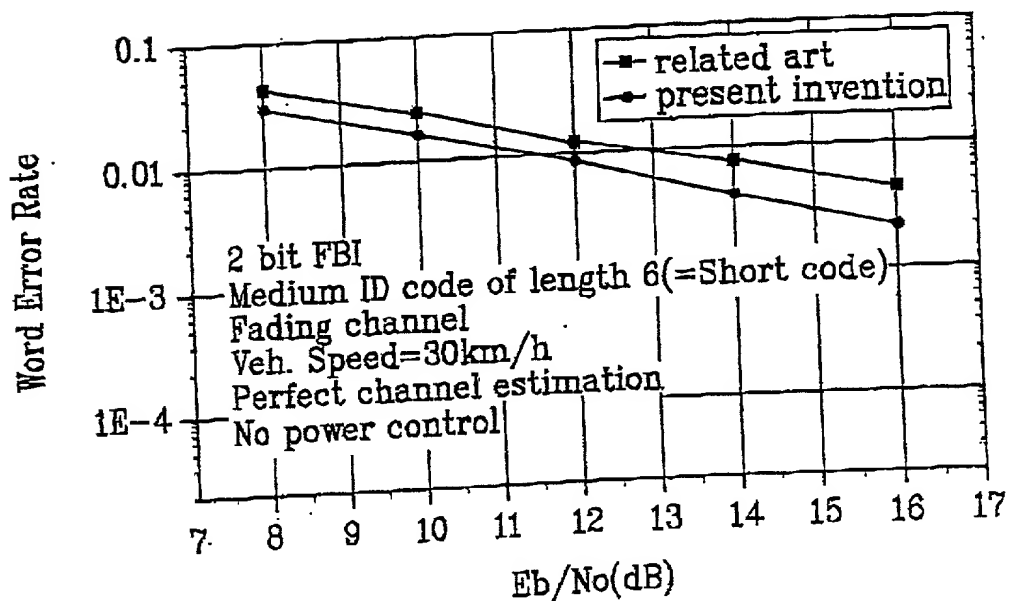


FIG. 8A

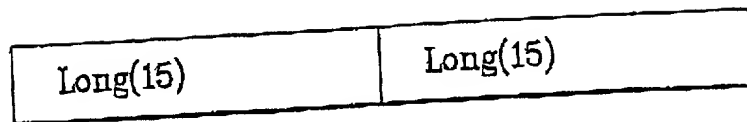


FIG. 8B

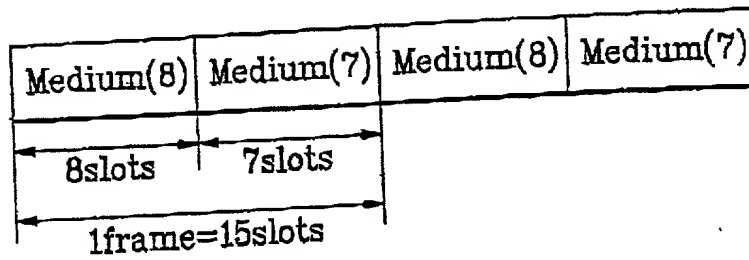


FIG. 8C

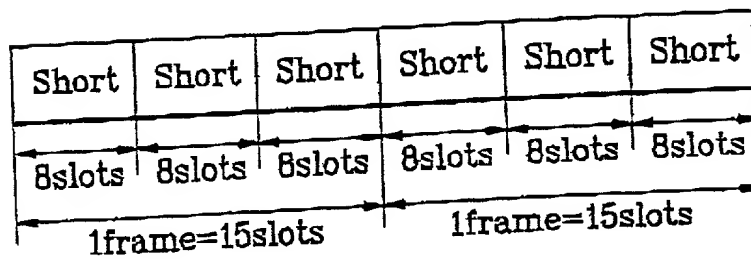


FIG. 9A

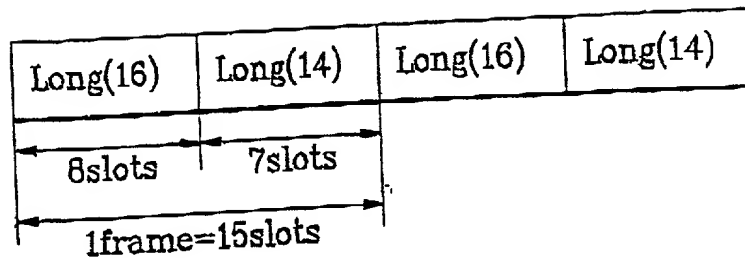


FIG. 9B

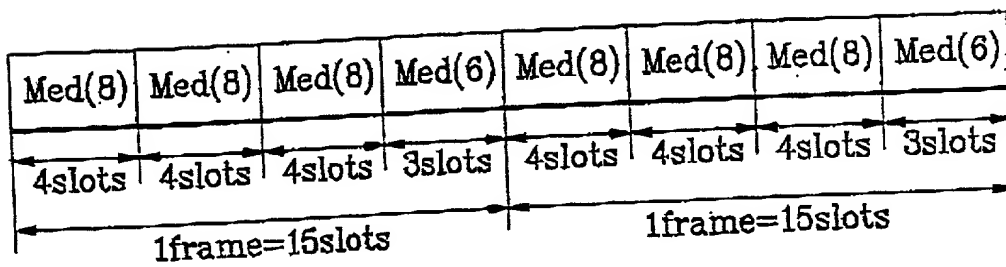


FIG. 9C

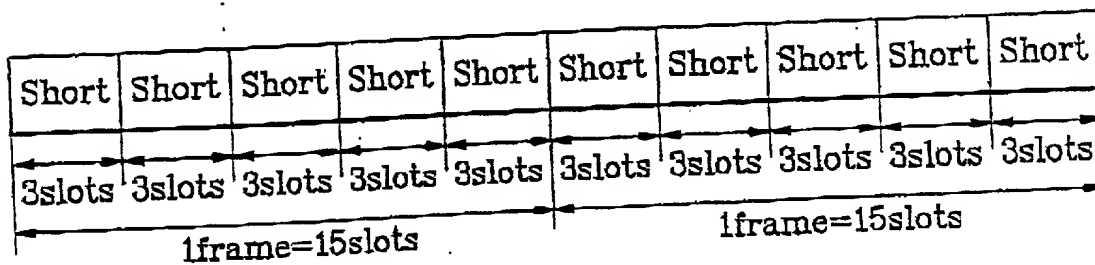


FIG.10A

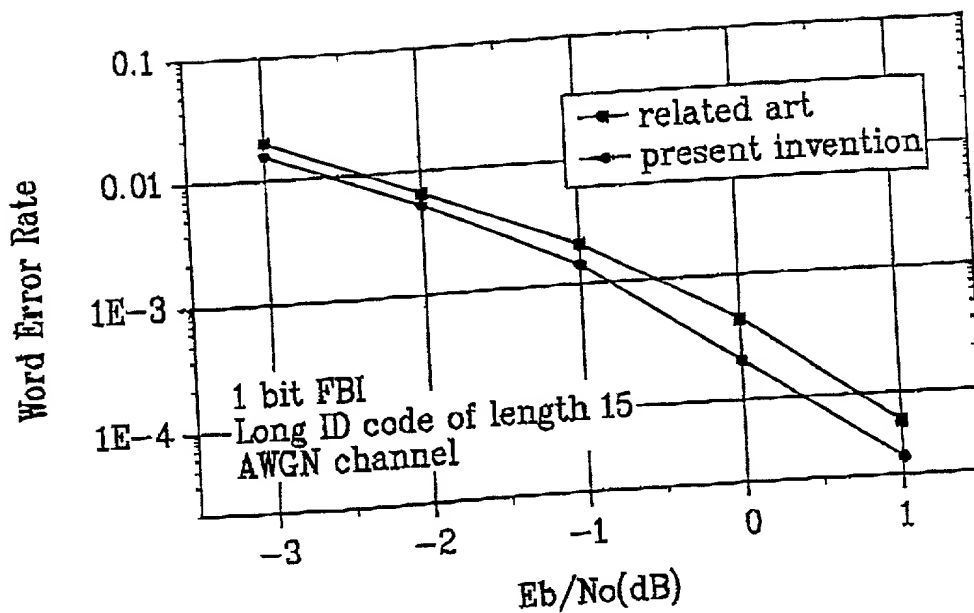


FIG.10B

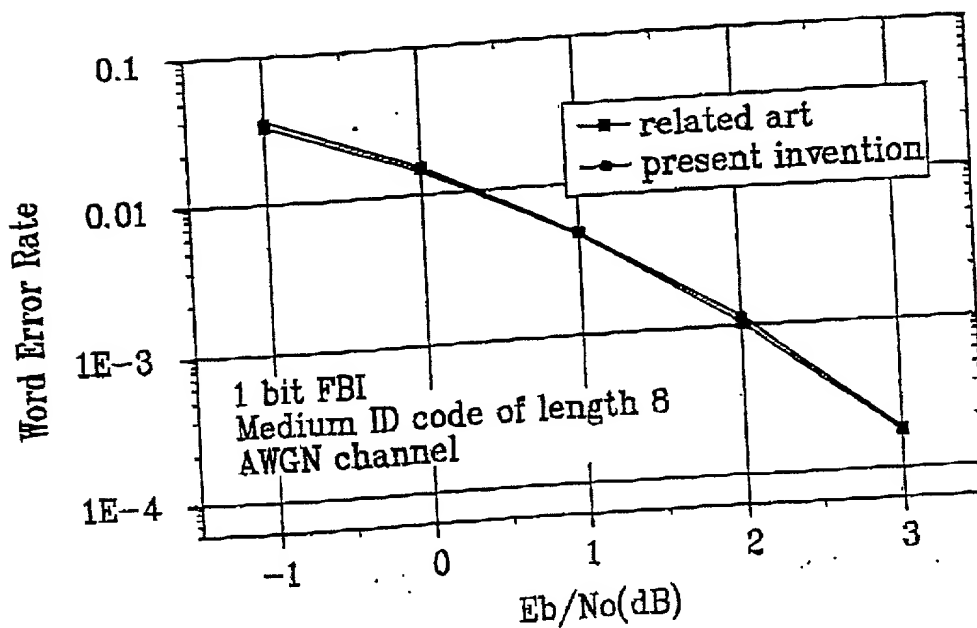


FIG.10C

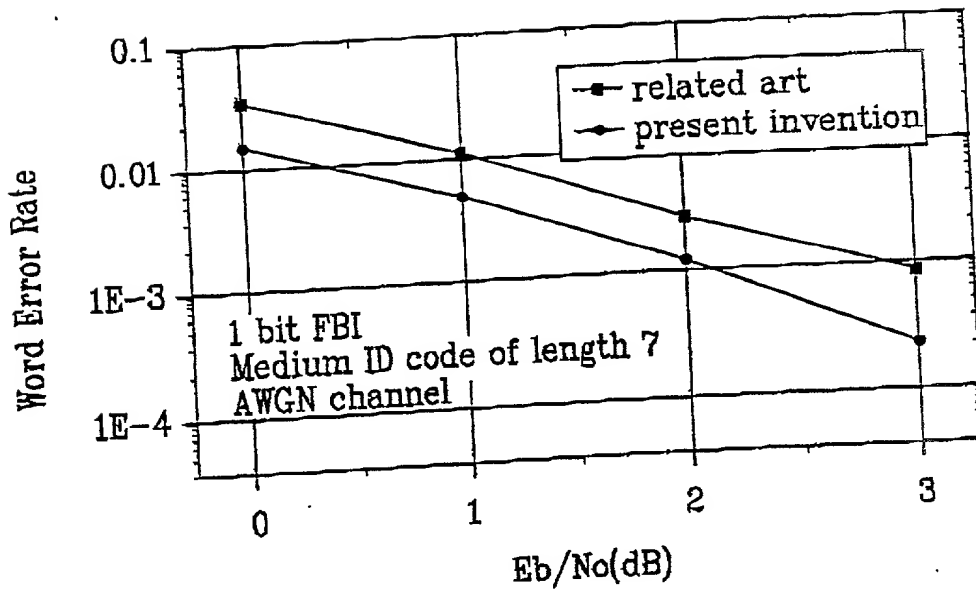


FIG.10D

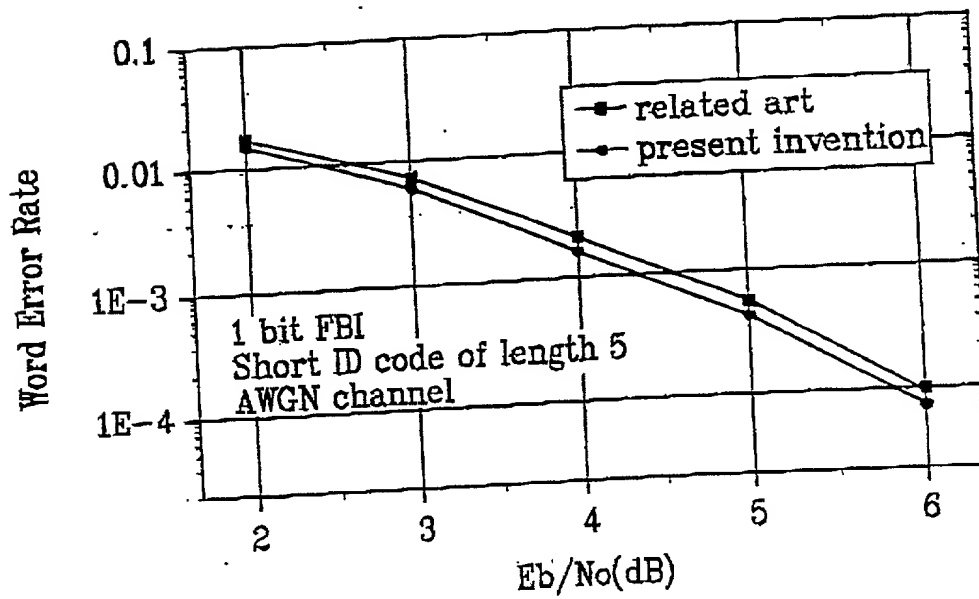


FIG.11A

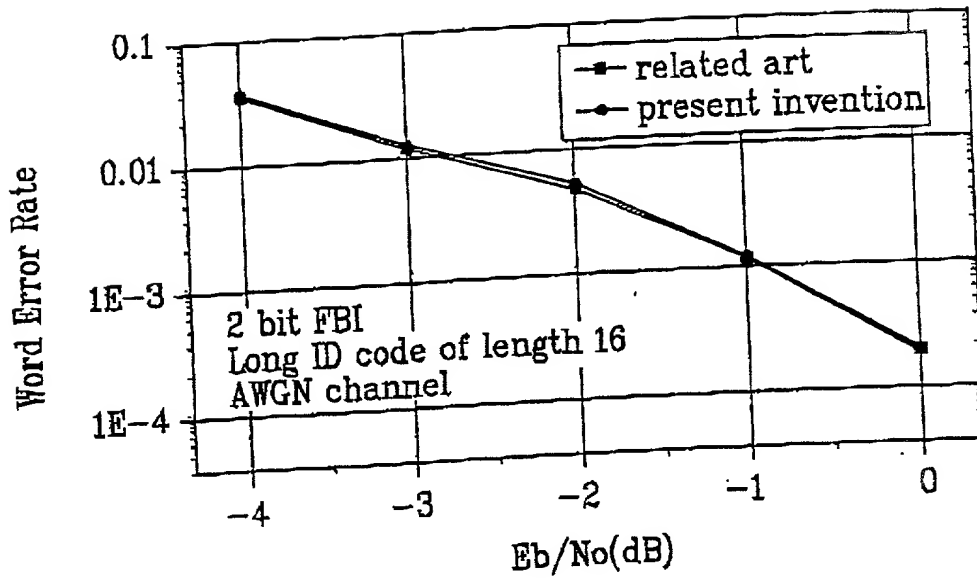


FIG.11B

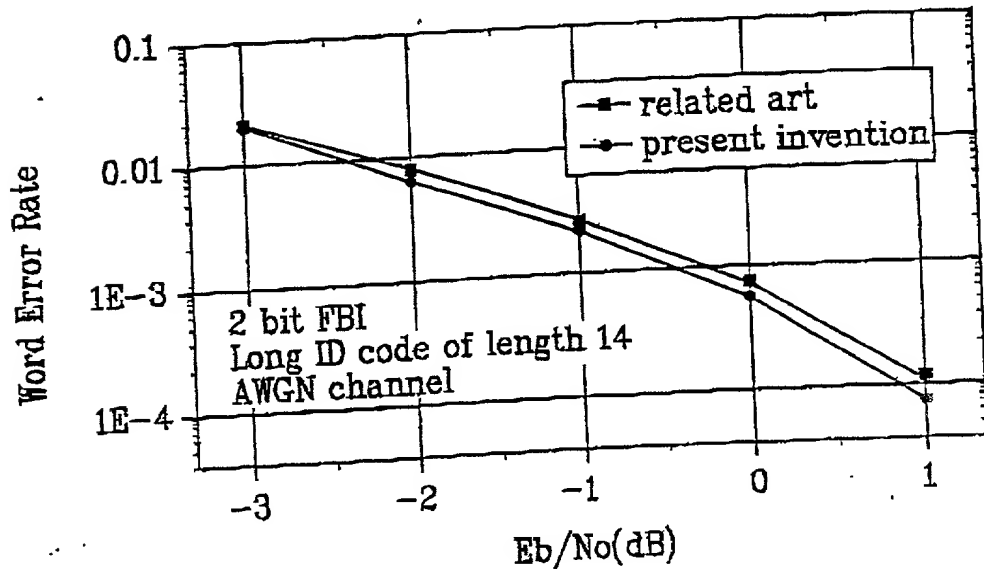




FIG.11C

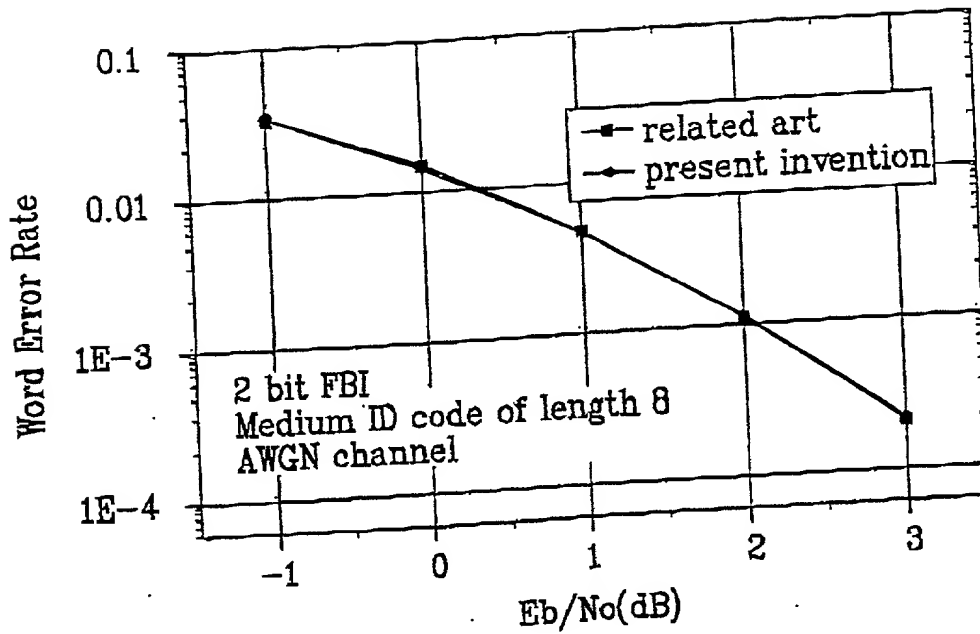


FIG.11D

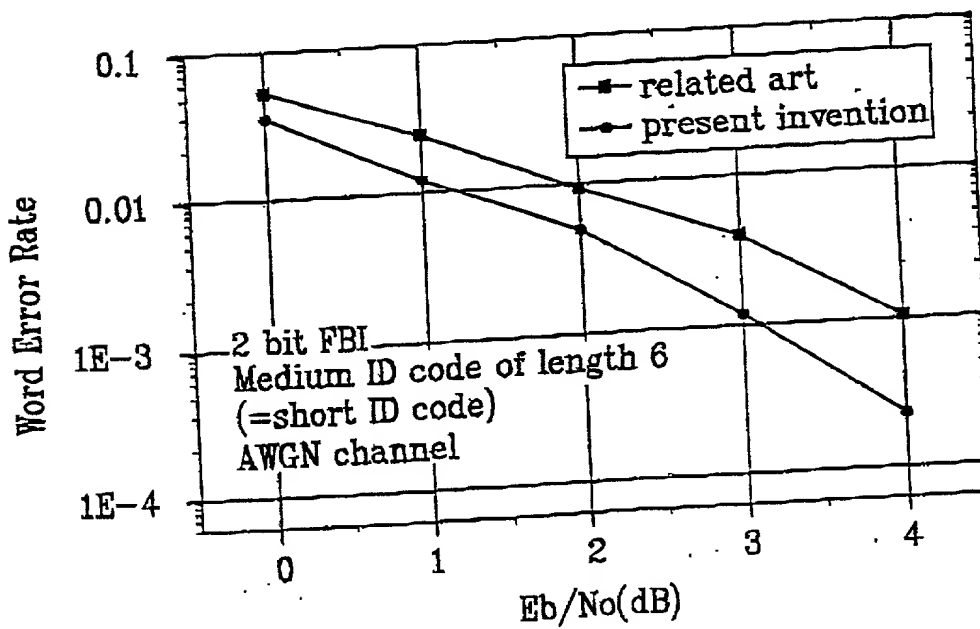


FIG.12A

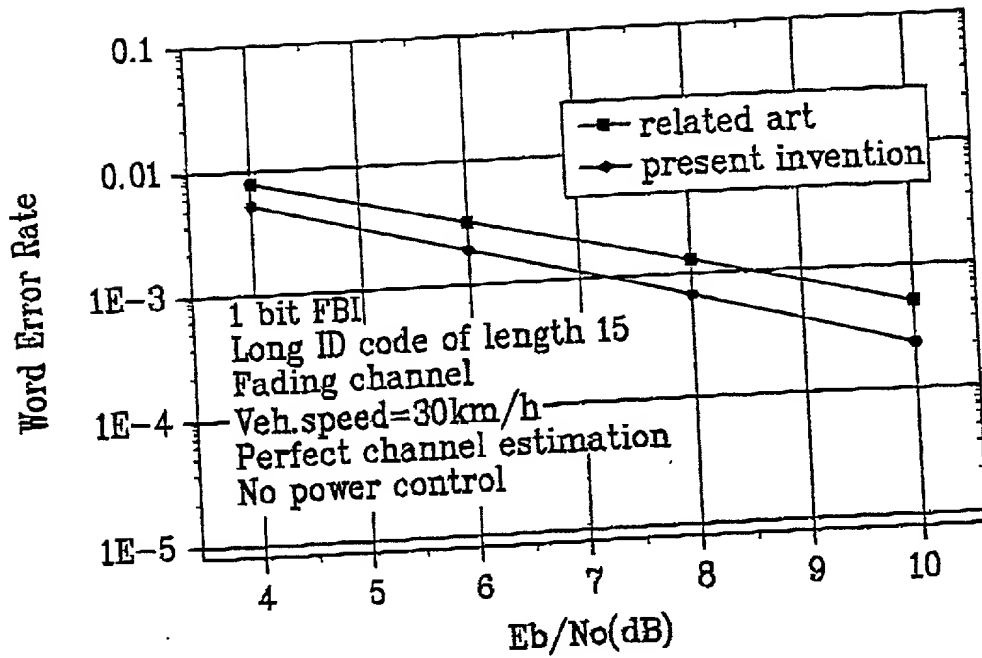


FIG.12B

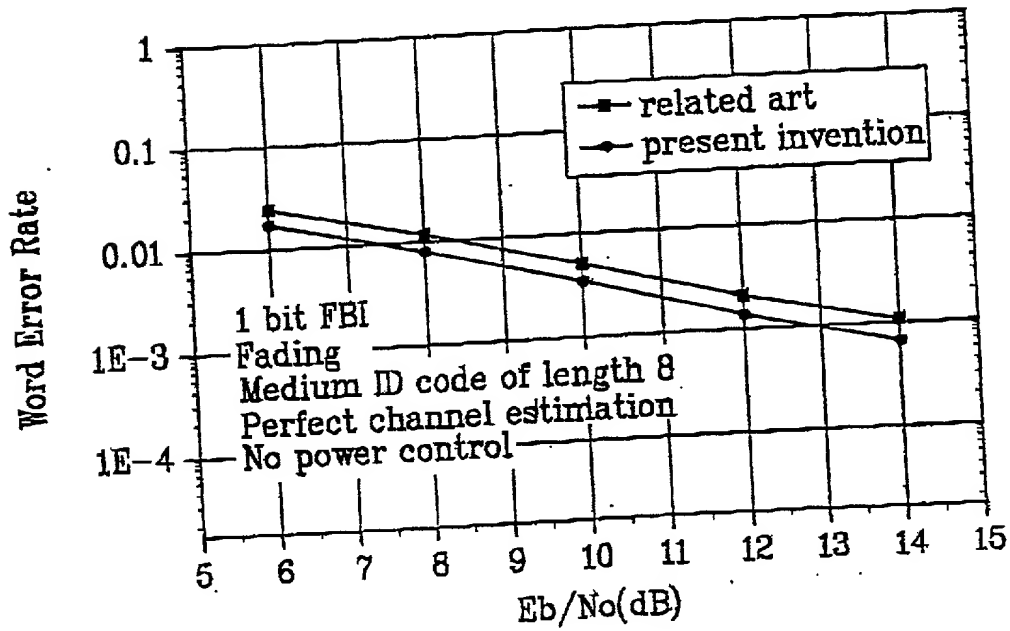


FIG.12C

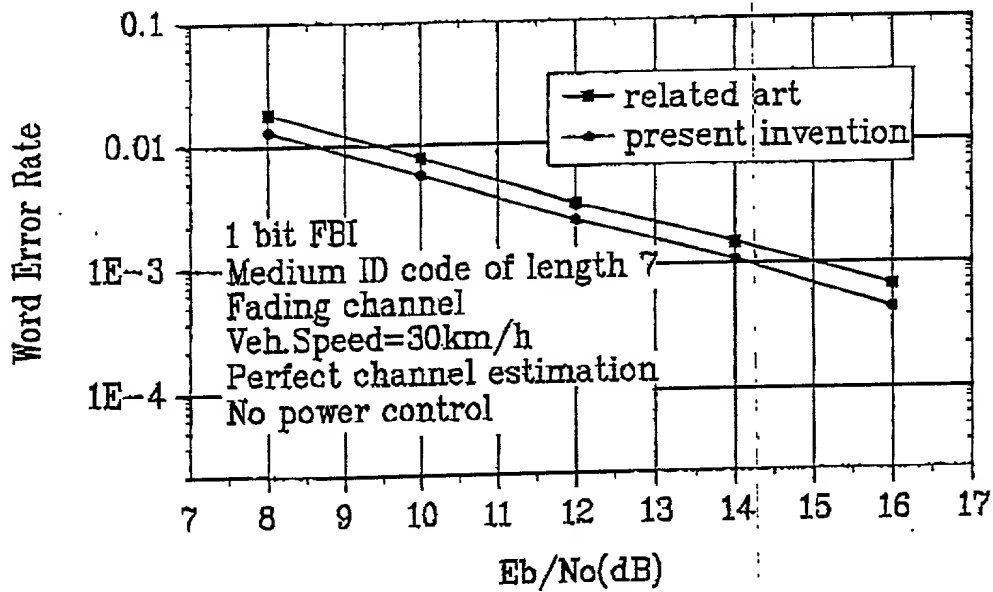


FIG.12D

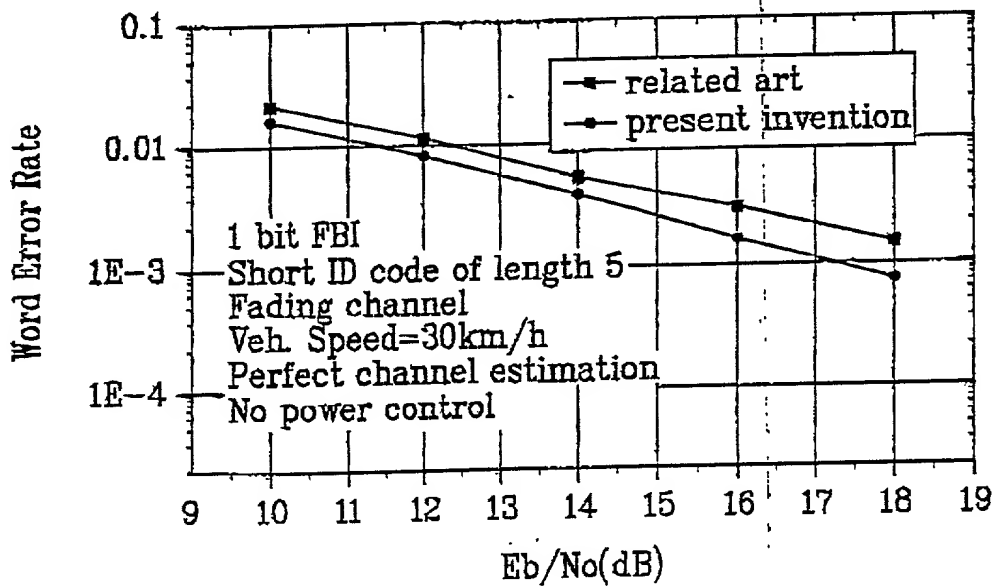


FIG.13A

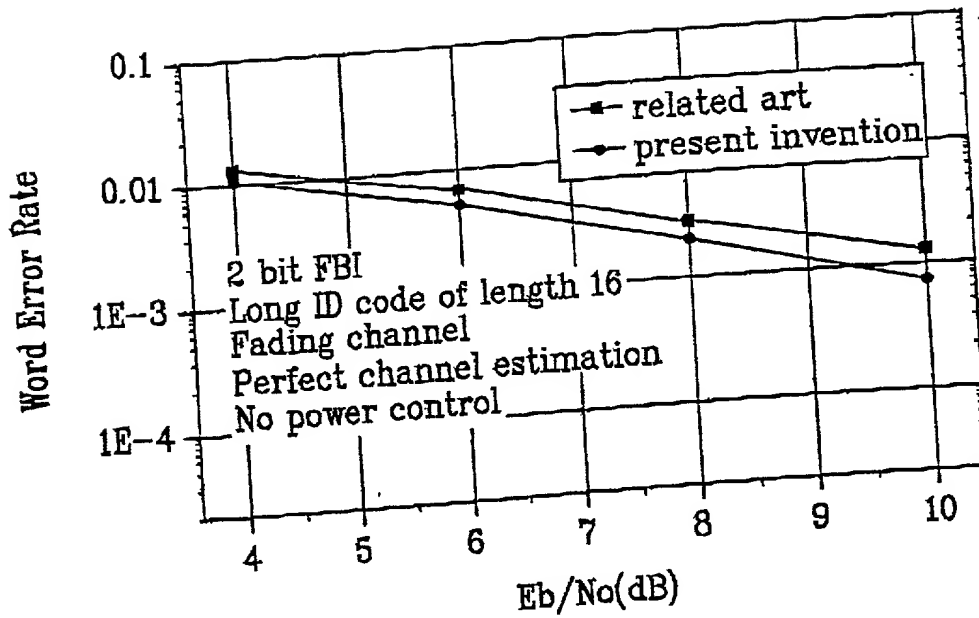


FIG.13B

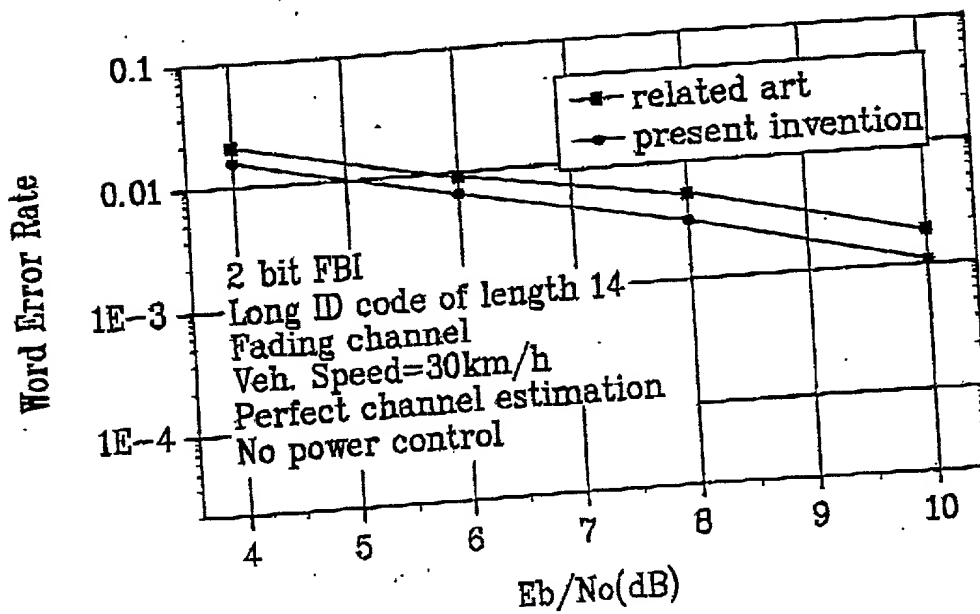


FIG.13C

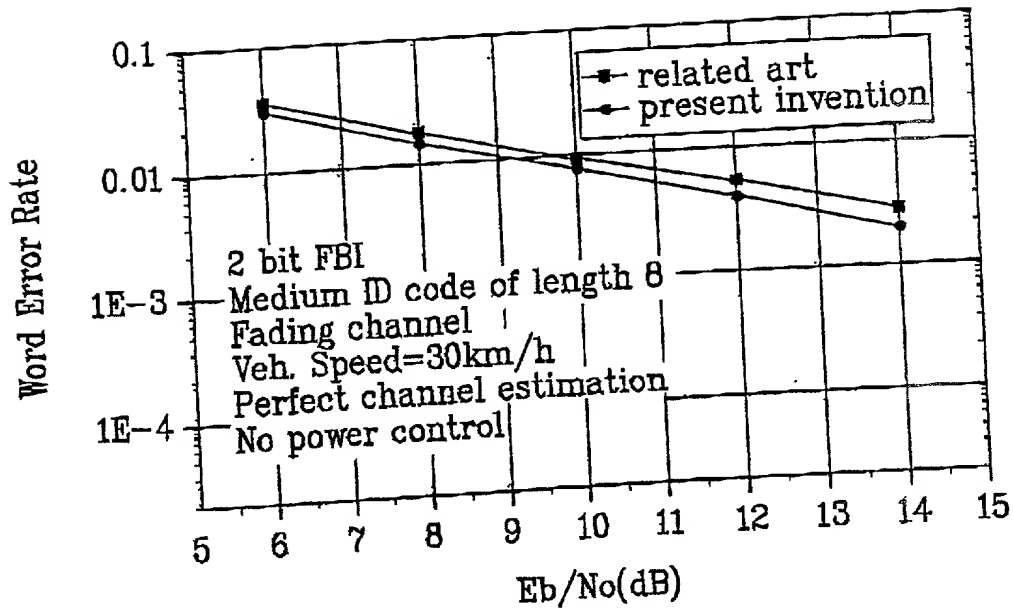


FIG.13D

